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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Nicholas Charles PARSON et al.
Serial No.: 10/066,442 Group Art Unit 1742
Filed : February 1, 2002 Examiner S. Ip
For : ALUMINIUM ALLOY AND EXTRUSION

REPLY UNDER 37 C.F.R. § 1.111

1185 Ave. of the Americas
New York, N.Y. 10036
April 6, 2004

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

S I R:

In response to the Office Action dated October 6, 2003, applicants respectfully request reconsideration and further examination of the above-identified application for the reasons set forth below.

Please note that a terminal disclaimer and fee are being submitted herewith.

Claims 9 - 16 are in the application. Of these, claims 9, 10, 13 and 14 are independent; claims 11 and 12 are dependent on 10; and claims 15 and 16 are dependent on claim 14. No claim has been allowed.

Claims 9 - 16 have been rejected under 35 U.S.C. §103(a) as unpatentable over JP 61030684 in view of Morris et al., and under §102(b) or §103(a) as anticipated by or unpatentable over GB 1484595. Claims 9 - 16 have also been rejected for obviousness-type double patenting as unpatentable over claims 3 - 8 of U.S. patent No. 6,375,767, which issued on applicants' parent application.

Referring first to the rejection (in point 3 of the Office Action) of claims 9 - 16 under §103(a) as obvious from JP 61030684 (the Japanese abstract) in view of U.S. Patent No. 3,879,194 to Morris et al., applicants submit that these two references may not properly be combined as the Office Action asserts, and consequently, that the subject matter of claims 9 - 16 is not *prima facie* obvious therefrom.

Neither the Japanese abstract nor Morris et al. suggests that their disclosures may be combined; there is no other cited prior art which suggests the combination; and a person of ordinary skill in the art would have had no reason to make such a combination.

The Japanese abstract relates to the alloy 6063S-T5 and treatments of that alloy. In contrast, Morris et al. relates to a modified alloy in which various components are controlled to lie in specified ranges. Consequently, the artisan of ordinary skill would have had no motivation to combine these two references because the Japanese abstract relates to the process to be applied to a known alloy, whereas Morris et al. relates solely to apparent improvement in the extrusion properties.

Even a combination of the Japanese abstract and Morris et al. would not have enabled a person of ordinary skill in the art to approach the present invention as defined in claims 9 to 16. The present invention requires a copper content of less than 0.015 wt%. In contrast, Morris et al. discloses a maximum copper content of 0.03 wt%. Thus, the copper content in the present invention is at least twice as small as that disclosed in Morris et al. (and a factor of 5 times smaller compared with a normal AA registered alloy). In view of the fact that the present invention is directed to a mass production process requiring production of a population of aluminium alloy billets and comprising performing more than one cast of metal from a body of molten metal comprising virgin metal and recycled scrap, reducing the copper content by

the amount required by the present invention over that of Morris is by no means trivial and requires a precise and controlled attention to detail under mass production conditions, very far from the routine modifications which is all that would have been obvious to a person of ordinary skill in the art.

To control the Cu content, one has to control the scrap addition, pay attention to the Cu content of the virgin metal and the recycled scrap, plan alloy changes and flush the furnaces. A requirement for a much lower Cu content places a much stricter burden on the production process. The ordinarily skilled artisan would only contemplate undertaking these steps to the required degree if he knew there would be a benefit to be obtained that outweighed the additional cost and difficulties in production.

The great advantage of providing such a low level of copper in the alloys is that undesirable variation in matteness is avoided in all of the metal from cast to cast with the low copper level. But to achieve this requires a previously unrecognized level of control over the use of recycled scrap furnace flushings and planning of alloy changes in the use of the furnace.

Therefore, if would not be possible for the skilled person to approach the subject matter of claims 9 - 16, even from a combination of the Japanese abstract and Morris et al.

All of claims 9 - 16 are method claims. They are all limited to the method features of

> "performing more than one cast of metal from a body of molten metal comprising virgin metal and recycled scrap wherein said body has a composition within a specification such that every billet of the population has a composition (in wt %) of: . . . Cu <0.015 . . ."

or, in the case of claims 13 and 14, "Cu <0.010."

As explained in the prosecution of the parent of the present application (see, in particular, the Declaration under 37 C.F.R.

§1.132 of the joint inventor Parson therein), the conventional practice of casting a population of billets by performing more than one cast of metal from a mixture of virgin metal and scrap would result in a population of billets inherently including many with more than 0.015 wt.% Cu. There is nothing in either the Japanese abstract or in Morris et al. to suggest modifying that conventional practice to provide the body of virgin metal and recycled scrap with "a composition within a specification such that every billet of the population has a composition (in wt %) of" Cu <0.015. In particular, the teaching of Morris et al. respecting an upper limit of 0.03 wt.% Cu, though arguably embracing a range of 0 - 0.03 wt.% Cu, contains nothing to motivate an artisan of ordinary skill to deliberately control the composition of a virgin metal - recycled scrap melt so that all billets of the cast population meet the extremely stringent condition of containing less than 0.015 wt.% Cu. Without such control, many billets of the cast population would contain more than 0.015 wt.% Cu, though all might satisfy the Morris et al. upper limit of 0.030 wt.%. Yet, as explained above and in applicants' specification, it is the recited condition of every billet of the population having less than 0.015 wt.% Cu that achieves the advantageous beneficial results of applicants' invention.

It is therefore submitted that the above-quoted recital, in each of the independent claims, distinguishes all of claims 9 - 16 clearly and patentably over the Japanese abstract, Morris et al., and any proper combination thereof.

With reference to the rejection of claims 9 - 16 as either anticipated by or unpatentable over GB 1484595 (Takahashi et al.), it may initially be noted that Takahashi et al. does not disclose that copper should be at a level of less than 0.015 wt% as required by the claimed invention. Although there is a disclosure

of copper being a possible impurity in the alloys disclosed in Takahashi et al., this is really an aside and there is no clear and unequivocal disclosure of copper at less than 0.015 wt%. Consequently, the invention as defined in claims 9 - 16 is novel over (not anticipated by) the disclosure of Takahashi et al.

Moreover, the Office Action does not establish a *prima facie* case of obviousness over this reference.

There is no teaching in Takahashi et al. that would have led a person of ordinary skill in the art to modify Takahashi et al. so as to arrive at the present invention as claimed in claim 9. The Examiner argues that Takahashi et al. discloses alloys bracketing those in claim 9. However, it is submitted that this is clearly incorrect because, as stated above in relation to novelty, there is no disclosure in Takahashi et al. that clearly requires such a low level of copper of <0.015 wt% (as required in claim 9) in an alloy, much less any disclosure of the great advantages of doing so in that it results in an alloy allowing an increase in matteness.

It is also the case that, in view of the great difficulties the skilled person would have in maintaining in a mass production process the low copper content required in claim 9, he would have no expectation of succeeding in achieving such low copper content, in particular with a melt of virgin metal and recycled scrap.

Assuming *arguendo* that, as the Examiner asserts, it is obvious for economic reasons to use recycled scrap with virgin metal and to "monitor and adjust the chemistry of a molten metal before casting," nevertheless there is nothing in Takahashi et al. to suggest that if a melt of recycled scrap and virgin metal were used, the chemistry should be monitored and adjusted in such a way that all billets in the cast population contain less than 0.015 wt.% Cu.

The method recitals of claim 9, and the like recitals in each of the other independent claims, are therefore submitted to present a patentable distinction over Takahashi et al.

The Examiner has also made an obviousness-type double patenting objection in view of U.S. Patent 6,375,767 which is the parent application of the present case. In response, applicants are submitting herewith a terminal disclaimer executed by the undersigned attorney of record.

For the foregoing reasons, it is believed that this application is now in condition for allowance. Favorable action thereon is accordingly courteously requested.

Respectfully,

Christopher C. Dunham

Christopher C. Dunham
Reg. No. 22,031
Attorney for Applicants
Tel. (212) 278-0400

I hereby certify that this paper is being deposited this date with the U.S. Postal Service as first class mail addressed to Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.

Christopher C. Dunham

Christopher C. Dunham, Reg. No. 22,031

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